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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,605	06/27/2005	Erik Shepard Thiele	CH2856USPCT	8992

7590 12/26/2006  
E I Du Pont De Nemours and Company  
Legal Patents  
Wilmington, DE 19805

EXAMINER
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MATTHEWS, ABRAHAM M

ART UNIT	PAPER NUMBER
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1755

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/26/2006	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/540,605		THIELE ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Abraham M. Matthews		1755	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2006.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 9-11, 13 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some    \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>03/16/2006</u>  | 6) <input type="checkbox"/> Other: _____                          |

Art Unit: 1755

## DETAILED ACTION

(1)

### *Election/Restrictions*

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-8 and 12, drawn to a process for making a water dispersible titanium dioxide pigment, classified in class 106, subclass 436.

Group II, claim(s) 9-11,13 and 14, drawn to a titanium dioxide pigment, classified in class 428, subclass 403.

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Claim 1 is obvious over U.S. Patent No. 5,785,748 to Banford. Accordingly, the special technical feature linking the two inventions, a water dispersible titanium dioxide pigment, does not provide a contribution over the prior art, and no single general inventive concept exists. Therefore, restriction is appropriate.

During a telephone conversation with Applicants' attorney Jessica M Sinnott on December 7, 2006 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-8, and 12. Affirmation of this election must be made by applicant in replying to this Office action. Claims 9-11,13 and 14 are withdrawn from

Art Unit: 1755

further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

(2)

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

Art Unit: 1755

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-8, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,785,748 to Banford et al., in view of U.S. Patent No. 5,114,486 to Demosthenous et al.

Regarding Applicants' claim 1, Banford et al. disclose a method for the manufacture of a water dispersible titanium dioxide pigment comprising the elements of the recitation of Applicants' claim 1 (Banford et al., column 2, lines 27-56, column 3, lines 13-33, column 1, line 65 to column 2, line 3, and Example 1).

The cited reference differs from the instant claim by not including in the disclosure elements the following recitation elements or process steps of said Applicants' claim 1: (a) mixing dry titanium dioxide pigment with water to form a mixture having a pigment concentration of from about 14 to 40 weight percent based on the weight of the mixture, then adjusting the pH of this mixture to about 7 with aqueous sodium hydroxide, and (b) inclusion of hydrochloric acid solution in the mixture in step (d) of instant claim 1, wherein Applicants recite: " adding any remaining aqueous sodium aluminate solution required to react with unreacted phosphoric acid added in step (c) to complete the formation of aluminum phosphate simultaneously with a solution of hydrochloric acid wherein the rate of addition of aluminate solution and that of the acid solution is adjusted so that the pH of the resulting mixture from and in this step (d) is maintained in a range from 5 to 8;"

However, as regards to the difference noted in (a) above, the said reference also further discloses that the suspension of titanium dioxide can be formed from water at a concentration of usually between 200 and 400 grams per liter of water (i.e, approx. about 17-34 wt % of suspension or mixture). Moreover, the reference also discloses the element of adjusting pH of the mixture to a value of at least 5 by addition of an alkaline compound, such as sodium hydroxide (Banford et al., column 2, lines 4-12). As regards

Art Unit: 1755

to the difference noted in (b) above, Demosthenous, also drawn to titanium dioxide pigments, discloses that typically during the addition of alkaline solution of the aluminate the pH of the aqueous dispersion rises to a desired value of , e.g., 6 to 6.5 and when such a pH value is reached then, if necessary, an amount of a mineral acid such as sulphuric acid is added to maintain the pH at the desired value of from 6 to 6.5 , if desired simultaneously with any remaining alkaline solution of aluminate required to be added (Demosthenous et al., column 3, lines 14-34).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the process elements and/or steps for the manufacture of a water dispersible titanium dioxide pigment disclosed by Banford et al. to include simultaneous addition of hydrochloric acid (a mineral acid) into the mixture, as taught by Demosthenous et al., in order to maintain the pH at the desired value of from 6 to 6.5 as suggested by Demosthenous et al. (Demosthenous et al., column 2, lines 20-22).

Regarding Applicants' claims 2-4, Banford et al., as applied to claim 1 above, disclose a method for the manufacture of a titanium dioxide pigment, as set forth in Applicants' recitation of claim 1. Banford et al., however, do not specifically disclose the ratio of the moles of phosphorous added to the moles of aluminum added, as set forth in Applicants' recitations of instant claims 2-4. Nonetheless, the claimed molar ratios would have been obvious to one of ordinary skill in the art at the time of invention through routine experimentation with the goal of optimizing said method for the manufacture of a titanium dioxide pigment.

Regarding Applicants' claims 5-7, Banford et al., as applied to claim 1 above, disclose a method for the manufacture of a titanium dioxide pigment, as set forth in Applicants' recitation of claim 1. Banford et al. also disclose that the amount of phosphorous in the coating is normally from 2 percent to 12 percent by weight calculated as  $P_2O_5$  with respect to titanium dioxide ( $TiO_2$ ) (Banford et al., column 2, lines 20-22). However, Banford et al. are silent about the amount of phosphoric acid added per kilogram of pigment in a particular step of the method of manufacture, as recited in Applicants' instant claims 5-7. Nevertheless, the claimed process variants with regard to

Art Unit: 1755

amounts of phosphoric acid additions per kilogram of pigment as, as set forth in Applicants' instant claims 5-7 would have been obvious to one of ordinary skill in the art at the time of invention through routine experimentation with the goal of optimizing said method for the manufacture of a titanium dioxide pigment.

The recitation of Applicants' instant claim 8 can be found in Banford et al. at column 2, lines 30-40, and in Example 14.


The recitation of Applicants' instant claim 12 can be found in Banford et al. at column 3, lines 34-36, and at column 4, lines 8-10 of Example 1.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Abraham M. Matthews whose telephone number is (571) 272-2495. The examiner can normally be reached on M-F 8:00 -4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

  
**DAVID SAMPLE**  
**PRIMARY EXAMINER**